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RISING DRAGON: DETERRING CHINA IN 2035

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Biography

Colonel James C. Dawkins, Jr., is an Air War College student at Maxwell Air Force Base, Alabama. An operational pilot in four aircraft (F-111, F-16, B-2, and RC-135), he has commanded a RC-135 Combat Training Squadron and has served in two joint staff assignments involving nuclear operations and policy. As an operations officer in the Nuclear Operations Branch of the J-3 on the Joint Staff, he maintained the President's Nuclear Decision Handbook. His duties included training the President's staff and military aides, Chairman of the Joint Chiefs of Staff, service chiefs, and flag officer senior controllers in the Pentagon's National Military Command Center, on the proper use of the handbook. In his most recent joint assignment he served as the Deputy Director of the Global Innovation and Strategy Center at United States Strategic Command (USSTRATCOM). He holds two graduate degrees from Embry Riddle Aeronautical University and the School of Advanced Air and Space Studies at Maxwell Air Force Base, Alabama.

Chapter 1

Introduction

The deterrence environment of 2035 will look much different than what strategists dealt with during the Cold War and in its immediate aftermath. During the Cold War, the two superpowers of Russia and the U.S. dictated how the world operated. Both nations, wary of the other's intentions, assured their respective sovereignty, as well as the sovereignty of their allies, with the threat of an overwhelming nuclear attack. Nuclear weapons, and the systems used to employ them, formed the cornerstone of each nation's strategic deterrence strategy. Ultimately, the massive defense expenditures required to counter U.S. capabilities bankrupted Russia first. With it, Russia fell in stature as a peer competitor to the U.S., and after their fall, there has been no formidable challenger to the winner of the conflict. Admittedly, Russia still maintains a robust nuclear arsenal and China has a few nuclear weapons of its own, but these countries lack the economic or military power of the U.S. By 2035, however, that will all change as America's relative power declines in the shadow of a rising China.

With this restructuring of the international power structure, the deterrent battlefield is also changing. During the Cold War, there were basically two warfighting domains: nuclear and conventional. Now, and for the foreseeable future, the world is moving into a time when man will also fight each other inside the domains of cyber, space, and economics. The ability to do so will be enhanced by the interconnectedness of the world and the rapid rate of technological change. The later may result in producing new domains that we cannot now imagine.

The environment the U.S. will face in 2035 raises interesting questions. How do we, the U.S., deter a rising China from unduly influencing our freedom of action in the future? What exactly will the landscape look like at that time? Are there any lessons we can learn from Cold War deterrence principles that can help the strategist in the future? Are nuclear weapons both necessary and sufficient to deter a rising China? These are some of the questions that this paper will answer. To that end, this paper argues that a combination of economic interdependence and advances in both cyber and space technologies will greatly complicate deterrent strategies against a rising China, posing numerous dilemmas and opportunities.

The paper begins with a review of the basics of deterrence theory. This is done in order to draw out the principles relevant to deterring China in the future, and to provide an overview for readers not well versed in deterrence theory. In this chapter, the difference between compellence and deterrence is explained using a scenario with which all are familiar; how to keep a teenager from breaking curfew. General, immediate, extended, narrow, denial, and cross-domain deterrence concepts are also briefly discussed in order to provide some clarity to a subject that is often misunderstood. Finally, this chapter touches on the principles and underlying assumptions of effective deterrence, paying particular attention to the principle of rationality and its role in determining how an adversary might react to deterrent threats since not all states or national leaders think or make decisions using the same construct that the U.S. does.

Next, the paper examines the cultural, political, economic, and military changes occurring in China and examines their future impact using an alternative futures study completed by the Air Force's Center for Strategy and Technology. These trends suggest that China is expected to grow in both economic and military power. By 2035, China will have the ability to exert her influence in the Asian region and beyond. This will occur simultaneously with

increased pressures on the world's limited food and energy resources, potentially creating a source of friction between the U.S. and China.

Chapter four informs strategists on factors they must consider in developing a deterrent strategy for China in 2035. The chapter begins by pointing out the friction points that may exist between the U.S. and China in the future. Specifically, it argues that while U.S./China relations are currently stable largely due to the economic interdependence between the two nations, this may change as demand increases for ever dwindling food and energy resources. Next, this chapter highlights the main differences between the Cold War deterrent environment with current and future deterrent environments. During the Cold War, to use Thomas Friedman's words, we lived in an "unflat and unconnected world." Today, what happens in one country is instant news in another. Moreover, U.S. and Chinese citizens interact in business and education in ways unheard of during the Cold War. This allows each nation insight into the other's decision making calculus, both complicating and simplifying deterrent strategies. The rapid rate of technological change also poses challenges for developing deterrent strategies as the U.S. deals with new domains of warfighting such as cyber and space.

The final chapter discusses how to develop a deterrent strategy for China in 2035. It begins with a look at what factors will influence China's cost/benefit calculations. China's method of choosing its leaders provides a continuity of core ideological beliefs that is helpful in determining what China's leaders value. This chapter then argues that nuclear weapons will play a role in a deterrent strategy for China. However, while necessary, these weapons will not be sufficient to deter a rising China that might resort to using massive cyber or space attacks against its enemies. U.S. threats of nuclear retaliation may not be seen as credible as a deterrent across the warfighting domains of space and cyberspace. These domains will likely necessitate their

own deterrent strategies, requiring policy makers to reconsider current restrictions on the secrecy of space and cyber attack capabilities.

The paper concludes with a discussion on developing extended deterrent strategies for U.S. allies in the region. Extended deterrence requires more than just threats to be credible. If the U.S. is serious about deterring China from attacking U.S. allies in the region, it will need to continue maintaining a presence in these nations.

Chapter 2

Deterrence: A Brief Review

This chapter will provide the reader with an overview of deterrence theory. It is not intended to be a thorough discussion of all of the nuances of a theory that has evolved over the past 60 years but instead will cover ideas germane to a discussion of deterring China in 2035. The first section discusses the basics of deterrence theory and the underlying assumptions needed for effective deterrence. Next, six different types of deterrence that are covered under the umbrella of deterrence theory are discussed and explained. Finally, this section highlights some of the basic and timeless principles of deterrence that will be useful in developing a deterrence strategy for China.

Deterrence Defined

Compellence and deterrence get confused at times which can lead to a fundamental misunderstanding of the principle of deterrence. Both are part of a larger concept called coercion. Thomas Schelling, in *Arms and Influence*, provides the following explanation of the distinction.

> The threat that compels rather than deters often requires that the punishment be administered *until* the other acts, rather than *if* he acts....Deterrence involves setting the state – by announcement, by rigging the trip-wire, by incurring the obligation – and *waiting.* The overt act is up to the opponent. The stage setting can often be nonintrusive, nonhostile, nonprovocative. The act that is intrusive, hostile, or provocative is usually the one to be deterred; the deterrent threat only changes the consequences *if* the act in question – the one to be deterred – is then taken. Compellence, in contrast, usually involves *initiating* an action (or irrevocable commitment to action) that can cease, or become harmless, only if the opponent responds. The overt act, the first step, is up to the side that makes the compellent threat. To deter, one digs in, or lays a minefield, and waits – in the interest of inaction. To compel, one gets up

> enough momentum to make the other *act* to avoid collision. Deterrence tends to be indefinite in its timing…Compellence has to be definite: We move, and you must get out of the way. By when? There has to be a deadline, otherwise tomorrow never comes. [1]

In short, deterrence requires threats of future pain or punishment to prevent or discourage an actor from doing something that they are not currently doing but may want to do now or in the future. Compellence, on the other hand, uses pain and punishment to make an actor either stop an action that they are already undertaking or make them do something they do not want to do.

To fully understand deterrence, we need to break the above definition down into its meaningful parts. The first part of this definition deals with the threat of future pain or punishment, a concept that those with teenage children understand well. For example, if we want to keep Johnny from coming home past his curfew, we threaten to take his driving privileges away if he comes home late. In this situation, the parent or the deterrer has made the threat. Now it is up to the child or person being deterred to make a cost/benefit decision. Faced with this threat, the child has to ask himself if the cost (pain or punishment of the loss of driving privileges) of breaking curfew will be worth the benefit of staying out later to do what he desires with his friends.

It is in the next part of the definition that we distinguish deterrence from compellence. At the time of the threat, Johnny is not currently doing anything that would make his parents take his driving privileges away. It is up to him to make a conscious decision on whether or not to break curfew. If, on the other hand, Johnny made the decision to break curfew so he could attend a party, his parents would have to use some means to compel him to come home. They would have to take action to make him stop doing something that he is already doing. To do

[1] Thomas C. Schelling, *Arms and Influence,* (New Haven, CT: Yale University Press, 1966), 70-72.

this, his father could simply go to where Johnny is and forcibly remove him from the party. In sum, deterrence is passively oriented requiring both parties to maintain the status quo, while compellence requires more action by both parties.[2]

Will and capability to inflict the pain or punishment is also fundamental to the ability to deter. If Johnny does not believe his father has the will or fortitude to actually take his car away, then the threat is what some call an "idle threat." If Johnny believes this to be an idle threat then he will factor that into his cost/benefit equation. The perceived cost will decline therefore increasing the relative standing of the benefit. Additionally, Johnny's father has to have the capability to take the car away. If he does not have the capability, once again, the threat is not credible.

Credibility is central to deterrence whether you are discussing family concerns or international relations. Threats that are not perceived as credible have little effect. If the U.S. decided to use threats of occupation and regime change in an attempt to deter Iran from acquiring nuclear weapons, that threat would not carry much weight due to a lack of credibility. There are two primary reasons for this. First, the U.S. is heavily engaged in Iraq and Afghanistan and does not have any excess military *capability* for such a large undertaking. Second, it is unlikely that U.S. political leaders would have the *will* to take on another regime change given the failures of Iraq and the current financial crisis. Deterrence requires capability and will on the side of the deterrer to make both overt and veiled threats credible, and states must act to make their commitments credible in order to deter.

Types of Deterrence

[2] Schelling, 71-72.

Understanding deterrence involves going beyond the types of weapons used. Although deterrence is often categorized as either nuclear or conventional, these two terms merely relate to a type of tool. Deterrence as a theory also deals with the scope and context in which an actor is to be deterred. As this theory applies to China, there are six types of deterrence that need to be defined: general, immediate, extended, narrow, deterrence by denial, and cross-domain deterrence.

General Deterrence. General deterrence occurs in a more relaxed state or status quo level. Noted deterrence theorist Patrick Morgan believes that general deterrence occurs "when opponents who maintain armed forces regulate their relationship even though neither is anywhere near mounting an attack."[3] For example, consider the state that existed between the U.S. and Russia during most of the Cold War. Both countries had substantial conventional and military capability that each could bring to bear during a conflict. At the same time both were wary of waking the giant on the other side of the world by poking him too hard. That is not to say that each country did not push each other at times.[4] If disturbed, the giant generally had only to remind the instigator that it would not be in either of their interest to continue on with their current actions. In a sense, general deterrence of aggression between the two countries ran in the background of policy making.[5] That, of course, continues today as the presence of nuclear weapons deters nuclear armed nations from pushing too hard against each other's national

[3] Quoted in Paul Huth and Bruce Russett, "What Makes Deterrence Work? Cases from 1900-1989," in *World Politics*, Vol. 36, No. 4, Jul, 1984, 496.
[4] The Cuban Missile Crisis was perhaps the closest the United States came to a nuclear confrontation with the Soviet Union. The way the events unfolded provided a rich case study for many strategists at the time. Thomas Schelling uses the crisis in his book, *Arms and Influence*, to explain the subtle nuances of deterrence and compellence.
[5] Lawrence Freedman, *Deterrence*, (Cambridge: UK, Polity Press, 2004), 40.

interests. Interruptions in the status quo, however, can quickly result in a move from general to immediate deterrence.[6]

Immediate Deterrence. Immediate deterrence is used to describe a deterrence situation when time is of the essence, for instance, during a crisis where one state is on the verge of attacking another. Using immediate deterrence, the target state will make threats of future pain and punishment if the other state breaks the peace and attacks.[7] Morgan asserts that immediate deterrence occurs "where at least one side is seriously considering an attack while the other is mounting a threat of retaliation in order to prevent it."[8] The 2002 crisis between India and Pakistan provide an example of immediate deterrence at work when India marshaled 700,000 troops on the border with Pakistan in a successful attempt to prevent cross border infiltration from Pakistan into Kashmir.[9] Revolutionary changes, such as the rise of emerging powers or tectonic shifts in the worldwide balance of power, can foster an environment where immediate deterrence comes to the forefront of policy.[10]

Extended Deterrence. Extended deterrence occurs when one actor attempts to deter another actor from attacking a third party. This type of deterrence was used extensively during the Cold War as the U.S. sought to deter the Soviet Union from attacking NATO countries with conventional and/or nuclear forces. Russia's conventional military might was such that they could have easily overwhelmed Western Europe's defenses. To preclude this from happening, the U.S. told the Soviets that aggression against a NATO nation would require a nuclear

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[6] Freedman, 42.
[7] Freedman, 40-42.
[8] Quoted in Paul Huth and Bruce Russett, "What Makes Deterrence Work? Cases from 1900-1989," in *World Politics*, Vol. 36, No. 4, Jul, 1984, 496.
[9] Praful Bidwai, "India, Pakistan: Talking heads achieve little," *Online Asia Times*, 27 Jun 2002, http://atimes.com/ind-pak/df27df01.html.
[10] Freedman, 41.

response due to the large mismatch of forces.[11] During that time, and to a large extent today, the U.S. used extended deterrence strategies to reassure non-nuclear capable states like Japan and South Korea that the U.S. would protect them from nuclear aggression or massive conventional attacks from nuclear armed states that might threaten their sovereignty. These non-nuclear states fall under what is called the U.S. nuclear umbrella.

Extended deterrence strategies are perhaps the most difficult to execute. Remember that deterrence is the product of capability and will. Though capability is rarely in question, it is the will of the deterrer that poses the most questions. States that benefit from extended deterrence are left to wonder whether or not the U.S. will support them against an aggressive adversary when the sovereignty of U.S. territory is not at risk. In order to calm these fears, during the Cold War, the United States deployed both conventional troops and tactical nuclear weapons in Western Europe. These tripwires, as Thomas Schelling calls them, made the Soviets think twice before attacking since a Soviet attack on the allied nations would likely mean that U.S. troops would suffer casualties as well.[12] The idea that the U.S. would suffer casualties reinforced in the minds of the Soviets, the American public, and our allies that an attack on Western Europe would be the same as an attack on the U.S., therefore strengthening U.S. will and making our threats more credible.[13] Christopher Layne sums it up nicely when he asserts that "the defender's deployment of forces is one of the most powerful factors in ensuring extended deterrence success, because it is a visible sign that the defender means business."[14]

[11] Freedman, 34-35.
[12] Schelling, 92-99.
[13] Christopher Layne, "From Preponderance to Offshore Balancing," in *The Use of Force: Military Power and International Politics*, ed Robert J. Art and Kenneth N. Waltz, (Oxford: Rowman and Littlefield Publishers, 1999), 295-296.
[14] Layne, 296.

Narrow Deterrence. Narrow deterrence is used to "deter a specific type of military operation within war."[15] The key idea here is that narrow deterrence is generally used in the midst of a war that is being waged with other means. For instance, narrow deterrence might involve deterrent attempts to prevent an adversary from using chemical weapons during a conventional conflict under the threat of severe retaliation.[16] The world saw this type of deterrence in action during the first Gulf war when President Bush threatened an overwhelming response if Hussein used chemical weapons on allied troops.

Deterrence by Denial. Deterrence by denial is a bit more complicated than the previous types of deterrence explained above. The aforementioned deterrence strategies considered deterrence from primarily the deterrers point of view. In them, the deterrer seeks to convey to the actor being deterred that if he acts in a way contrary to the deterrer's desire, the cost he will incur in the form of punishment from the deterrer will exceed any benefits that he seeks. A denial strategy, however, allows the actor being deterred to reduce the costs associated with threats of punishment from a deterrer. Since deterrence comes down to a cost/benefit calculation, if the actor being deterred can reduce his ratio of costs to benefits he may be more inclined to act in a way that goes against the deterrer's desires. Denial can, in effect, reduce the credibility of the deterrent threat.[17]

The ability to operate in a chemical environment provides a useful example of how deterrence by denial works. U.S. troops train regularly with chemical protective gear. Training and protective equipment effectively allows these forces to "fight through" an attack. While operating in a chemical environment slows forces down, it does not keep them off the battlefield.

[15] Freedman, 32.
[16] Freedman, 32-33.
[17] Freedman, 36-40.

This has a way of countering a deterrent threat. For example, if during the first Gulf War Saddam Hussein had threatened to use chemical weapons on allied troops in an attempt to deter an invasion by increasing the costs to the allied forces, the allies would have been prepared to lower these costs through the use of a protective ensemble (chemical masks, charcoal lined uniforms, etc.) and proper training. Deterrence depends on the enemy's perception of our decision calculus just as much as we depend on understanding his.

Cross Domain Deterrence. Cross-domain deterrence is the ability for the weapons or tools of power from one domain to be used to deter the weapons or tools of power in another domain. For example, it is debatable whether a threat of nuclear retaliation would be effective at deterring a country from conducting a massive cyber attack. Conversely, threatening to attack another country's space assets might be able to deter certain cyber attacks. The crux of the discussion comes down to what Schelling calls connectedness. Connectedness is the requirement to "keep the demand and the threat in the same currency to do what seems reasonable."[18] While he is discussing compellence, the idea of connectedness also applies to deterrent threats. Deterrent threats must seem reasonable in order for them to be meaningful and thus credible.

Principles and Underlying Assumptions of Effective Deterrence

From the experiences using deterrence during the Cold War came some fundamental principles about how to successfully conduct deterrence on the international stage. What follows is not an all inclusive list but one that deals with the most notable and important principles that evolved.

[18] Schelling, 87.

Communication. Clear, concise, and unambiguous communication must occur between two actors for deterrence to work. Unclear or vague threats of future pain and punishment leave too much to chance and can result in the breakdown of a deterrent threat. Likewise, the deterrer must communicate clearly to the actor being deterred what events will and will not spur the deterrer to action.[19]

Intelligence. Intelligence plays a key role in the communication process. The deterrer has to know whether or not the target of the deterrent strategy has successfully received and interpreted the threat in accordance with the intent it was given. Likewise, the deterrer has to be able to determine whether or not the target has complied with the demands in a way that the deterrer approves.[20]

Applicability and Credibility. Deterrent threats must be applicable to the situation at hand in order for them to be credible. For instance, history has proven that nuclear weapons have not deterred all conflict. True, there has not been a great power war since the first use of a nuclear weapon, but there have been numerous lower level conflicts.[21] If deterrent threats are not applicable to the situation at hand and end up not being followed up on, then they fall into the realm of an idle threat, consequently weakening future threats and reducing credibility.[22] Applicability and credibility are critical in understanding how the aforementioned cross-domain deterrence works.

Perceptions. Different perceptions of the meaning of a deterrent threat can lead to confusion on both sides of the deterrence equation. Deterrence often fails when this occurs. Preventing this

[19] Andrew J. Goodpaster, C. Richard Nelson, and Seymour J. Deitchman, "Deterrence: An Overview," in *Post-Cold War Conflict Deterrence*, (Washington, DC: National Academy Press, 1997), 22.
[20] Goodpaster, et.al., 24.
[21] Goodpaster, et.al., 30.
[22] Goopaster, et.al., 24.

requires both sides to understand, at least at some basic level, how the other side thinks and what each values. Recent conflicts in the War on Terror bear this out. What works in one culture may not work in another, and it would be ill advised to develop a strategy that uses mirror imaging when conducting deterrence. Consequently, it is of the upmost importance that the deterrer communicate threats or intentions in a manner consistent with the value system of the actor being deterred when conducting deterrent strategies.[23]

Rationality. Rationality is perhaps the most critical of the principles in understanding how to effectively use deterrence. When discussing rationality however, many people mistakenly confuse the idea or rationality with reasonableness. According to Keith Payne, "rationality is a mode of decision making that logically links desired goals with decisions about how to realize those goals."[24] In other words, it concerns how actors weigh information in order to make cost/benefit or value judgments. Many believe that Kim Jong-il, Mahmoud Ahmadinejad, and Osama bin Laden are irrational leaders because they use methods and make demands that do not match with Western sensibilities and thoughts about right and wrong. But in their culture or way of thinking about issues they are making rational decisions by weighing costs and benefits within their frame of reasoning. Regardless of whether or not we think their decisions are reasonable, they are in fact making rational decisions based on the information that they are presented.[25]

Complicating this discussion is the debate on how nation-states make decisions. Some may believe that Kim Jong-il makes all of the decisions that determine the direction his country is heading by taking in all available information, weighing the costs and benefits of a given course of action, and adjusting his decisions as new information becomes available. However,

[23] Goodpaster, et.al., 23.
[24] Keith B. Payne, *The Fallacies of Cold War Deterrence*, (Lexington, KY: The University Press of Kentucky, 2001), 7.
[25] Payne, 7-10.

according to Graham Allison, there are other decision making elements involved. In his book, *Essence of Decision; Explaining the Cuban Missile Crisis*, he argues it is naïve to think that governmental decisions are made in such a simplistic fashion. According to Allison, "treating national governments as if they were centrally coordinated, purposive individuals provides a useful shorthand for understanding policy choices and actions. But this simplification – like all simplifications – obscures as well as reveals. In particular, it obscures the persistently neglected fact of government: the "decision maker" of national policy is obviously not one calculating individual but is rather a conglomerate of large organizations and political actors."[26] Rather, the interplay of governmental politics and governmental organizational bureaucracy has as much or perhaps more to do with how decisions are made than the lone individual actor at the head of a nation state or organization.[27] Therefore, because deterrence theory depends so heavily on the actor being deterred making rational decisions, any strategy has to fully understand, or at least address, the formal and informal decision-making apparatus making the cost/benefit calculations.

As stated before, the types of deterrence and the principles that help explain the theory described above are not all encompassing. There are countless books written on the subject that breaks the theory down into all of its subsets and nuances. The previous section, however, has addressed the most important elements, elements that any future deterrent strategies against the rising China described in the next section must address.

[26] Graham Allison and Philip Zelikow, *Essence of Decision; Explaining the Cuban Missile Crisis*, (New York, NY: Longman, 1999), 3.
[27] Allison and Zelikow, 4-6.

Chapter 3

China in 2035: The Cultural, Political, Economic, and Military Landscape

In order to determine what deterrence against a rising China might look like in 25 years we must first determine what China will look like socially, politically, economically, and militarily. Will it still be on a seemingly peaceful path to prosperity? Will China fully embrace capitalism as the West knows it? Will Taiwan be peacefully absorbed by a rising China? Or will something happen that turns China into a hegemonic superpower looking to project its influence abroad at all costs? These are a few of the questions that a select group of individuals from the United States' Air War College tried to answer as part of a larger study. The researchers were part of the 2007 Blue Horizons study, commissioned by then Air Force Chief of Staff, General T. Michael Moseley, to "provide a common understanding of future strategic and technological trends for Air Force leaders to make better decisions."[28] To fulfill this challenging requirement, the Blue Horizons team needed to develop a framework to capture the future state of geopolitics. In order to do that the team developed four scenarios to plan against: a resurgent Russia, a failed state, the overthrow of a friendly state by Al Qaeda type insurgency, and a China rising to peer status with the United States. The 170-page monograph that resulted from the China analysis, *Discord or "Harmonious Society"? China in 2030*, forms the backbone of this chapter.[29] A brief summary of their conclusions are presented below.

Cultural Underpinnings

[28] John P. Geis, II, PhD, Colonel, USAF, Scott E. Caine, Lieutenant Colonel, USAF, Edwin F. Donaldson, Colonel, USAF, Blaine D. Holt, Colonel, USAF, Ralph A Sandfry, PhD, Lieutenant Colonel, USAF, *Discord or "Harmonious Society"? China in 2030*, Occasional Paper No. 65, Center for Strategy and Technology (Maxwell AFB, AL: Air University Press, July 2008), 11.

[29] The group's analysis of China used a modified Delphi method to generate and evaluate answers and also relied on a Value-Focused-Thinking model to evaluate predictions about what China would look like in the military, political, economic sectors in 2030.

Confucianism, Taoism, and Buddhism form the cultural underpinnings of Chinese thought and action. Confucianism, the most dominant of the three, teaches that "compassion, ritual, and social hierarchy [are the] means to maintain order in Chinese society."[30] Taoism, an alternative yet complimentary school of thought, calls for followers to abstain, "from the futile pursuit of human endeavor, social activity, and individual ambition."[31] Buddhism forms the last piece of the three part ideology. Introduced by India in the first century AD, "Buddhist(s) seek to escape from the world that brings on human suffering by renouncing individual consciousness and cravings in order to experience an abyss of nothingness."[32]

These three ideals, particularly Confucianism, form the basis of what is called the "mandate from heaven," a principle that is key to understanding how China views its political system. The mandate acts as a way to keep the powerful elite from suppressing the desires of the common class too forcefully because within the mandate, the people have the right to rebel if the leaders fail to maintain order and provide for basic needs. This right to rebel allows the individual to subjugate himself to the ruling class since he knows he can play this trump card if necessary. It is a mutually beneficial agreement that allows the population to "hold fast to the Confucian value of benevolence to the sovereign."[33]

The Chinese have been able to integrate elements of both the communist and democratic systems into their three-part ideology in a relatively peaceful manner. While Mao Zedong instituted a modified form of communism in 1949, democratic and capitalist reforms are now being embedded into segments of Chinese society and governance. Over the next 25 years the ruling communist party will increasingly expose its population to more democratic ideals in an

[30] Geis et al., 24-25.
[31] Geis et al., 25.
[32] Geis et al., 27.
[33] Geis et al., 38.

attempt to placate those outside of the ruling elite who want to have a more active role and say in their future.[34]

As a result of China's demographics, its large population will present great opportunities for the exportation of Western ideals. China's one child policy has resulted in a population structure with very few youth, and a glut of middle-age and elderly people. Over time, China's demographic structure will include an increasing number of elderly, supported by a dearth of people who fall in the younger ages groups. In fact,by 2030, 500 million of the projected 1.5 billion Chinese will be over 50. This aging means that there will be less stress on the education system allowing perhaps up to 90 percent of the children to attend primary and secondary schools. This generation will be the most educated in China's history with literacy rates approaching 95 percent making it one of the most highly educated countries in the world. This "Westernization" of their education system will perhaps have the greatest impact on the cultural underpinnings of future Chinese behavior. The Chinese are building their universities to more closely mirror western systems. Additionally, they are increasingly sending their top students to the West to study and work for short periods of time before returning to China. This exposure will continue to open their eyes to democratic ideals of personal freedom and human rights.[35]

Most if not all of this subset of the population will have some level of access to the internet. Gone will be the great firewall of China. The free flow of information will result in not only a more educated but more aware and worldly generation able to partake of the benefits of Western society.[36] These ideals will continue to be peacefully integrated into the Chinese pattern

[34] Geis et al., 131.
[35] Geis et al., 34-36.
[36] Geis et al., 131-135.

of thought and culture "with only sporadic and minor challenges to the Chinese Communist Party's authoritarian rule."[37]

Political System

For over 4,000 years, China has experienced both lows and highs that come with a nation trying to find its way on the world stage. China saw great growth from the Ming Dynasty until the 18th century when they were considered the Asian hegemon. However, during the mid 18th century, European power was steadily increasing with countries looking to trade with Asian nations friendly to their objectives. China was intent on focusing inward and was hesitant to become involved in foreign affairs. This posture, however, did not stop Europe, Japan, and the United States from exploiting China wherever they could. These exploitive initiatives put much pressure on the ruling dynasty at the time which ended with the Japanese occupation. The period from 1840-1949 is known as the "Century of Humiliation," a period that Chinese people remember and to which they vow never to return.[38]

The impact of foreign intervention was not lost on an inspired Mao Zedong. Mao took the peoples' anger and turned it into revolution. During his rule, Mao established the Chinese Communist Party and sought to distance his country even more from the international stage, especially in the economic realm. However, Mao's strategy would not endure in the long run.

In 1976, Mao's successor, Deng Xiaoping realized that China needed to interact with the world economically if it was going to be able to maintain and possibly increase its power on the international stage. He established a policy called *Socialism with Chinese Characteristics* aimed at merging communist ideals with economic realities. During his tenure, he reformed the party

[37] Geis et al.,, 131.
[38] Geis et al., 46-49.

structure, making the President the partly leader with the Premier as his deputy. The three ruling bodies of the party became the Politburo Standing Committee, Politburo, and the Central Committee. Membership, originating from the party elite, changes hands every five years. These reforms have enabled the peaceful transitions of power between successive presidents, a situation that is integral to China's ability to do long-term planning and strategy development.[39]

China's current President, Hu Jintao, has embarked on a grand strategy he calls the "*Harmonious Society*." Hu seeks to maintain economic growth and simultaneously focus on social issues such as the poverty that afflicts millions in the country side. This strategy, coupled with slight forays into openness demanded by outsiders, should help China continue to make great strides in integrating with the international community. The trick will be for Hu and his successors to balance authoritarian rule with the progress that comes from a rising middle class.[40] They will not want to jeopardize their "mandate from heaven" by allowing the have and have not divide to widen disproportionately.

In trying to describe the political landscape of China in 2030, the Blue Horizons team examined the process of Chinese leadership transition. China's modern succession of leadership is currently in its fourth generation. Chinese President Hu Jintao is grooming his successor now (fifth generation) with most analysts agreeing that either Li Kiquang or Xi Jingping will succeed him as China's leader through 2022. The fact that the new president will be able also to personally pick and groom their successor provides a level of continuity of leadership philosophy that is uncommon in nation-states today. These fifth and sixth generation leaders are living through China's rapid rise onto the world stage as it continues to turn economic power into

[39] Geis et al., 49-52.
[40] Geis et al., 43-44.

geopolitical power. They are witnessing China's forays into Africa, and the response to growing social issues at home. They will understand the importance of following the "mandate from heaven," a path that allows them to peacefully lead China into greater prominence on the world stage.[41]

Democracy in 2030 is likely to spread, but in an even and strictly controlled manner. More individuals at the local and national level will be allowed to participate in the democratic process but only in a way that does not challenge party control. In allowing these democratic reforms to take place, the CCP seeks to give voice to more of the population in order to quench their thirst for widespread government participation. As non-party members, though, it is unlikely that they will be able to generate any major government reforms. Rather, the CCP will use them more for their insight into public opinion in an effort to help the CCP shape reforms. Those allowed to vote will be small in number and the effect of their vote will be to keep the ruling elite aware of the issues that concern the lower class.[42]

At the same time, CCP membership will likely double from the 2007 level of 74 million members to 150 million. Money, not ideology will be the determining factor on who is admitted to the party with the newly wealthy becoming more involved in government decisions. The Blue Horizons team coined this as "democracy with Chinese characteristics [which] will resemble something more analogous to a 'China Inc.' model made up of the capitalist and oligarch top strata as board members in the 2,500 member ruling body, as opposed to reformed communists

[41] Geis et al., 135-136.
[42] Geis et al., 136-137.

raised during the Cultural Revolution."[43] These efforts will aim to keep the majority of the population content with the authoritarian rule that will still exist.

China will aim to turn its economic power into international power as it seeks to become more active in shaping world politics. China will continue to expand its economic and diplomatic influence into Africa as well as the Middle East in order to influence these resource rich areas. It is already seeking membership in world-wide alliances such as the Association of Southeast Asian Nations, Asia-Pacific Economic Cooperation, and African Union, and will likely want to cultivate a close working relationship with the EU.[44] This will all be in an effort to assert itself as the Asian hegemon in the Pacific. While still important to China, concern over how the United States views China may be supplanted by how India views China. India's proximity combined with the possibility that India will be an economic super power in its own rite will force China to pay more attention to a democratic India. China's claim on the resource rich Spratley Islands will either be secure and China will continue to establish arrangements with other Asian countries for port access.[45]

Japan, South Korea, and Australia will be in a precarious position. Mindful of a hegemonic China, they will want reassurances from the U.S. that it will continue to represent their interests even to the point of maintaining a military presence in these countries. However, they will not want to alienate themselves from a powerful nation sitting at their doorstep. China will likely question the need for agreements or assurances as China will be able to keep the free flow of trade open to peaceful nations in the Pacific.[46]

[43] Geis et al., 137.
[44] Geis et al., 137.
[45] Geis et al., 138-139.
[46] Geis et al., 139.

Ultimately, the Blue Horizons team believes that China will maintain a stable and predictable course into the future. To make this a reality, though, China's leaders will have to rule justly and pay attention to the needs of the people. The catch is that a rising China will create a more needy China as more of the population moves into the middle class. If unable to meet these needs, one could see China's leaders resorting to extreme measures on the world stage with regards to resource acquisition through the use of force in order to maintain their mandate.[47]

Economic Outlook

China is already a rising economic powerhouse. As of late 2007, China was third in the world in terms of Gross Domestic Product (GDP), had an 11.5 percent expected GDP rate of growth, and had exports over $1.2 trillion and imports of over $500 billion. Chinese imports are likely to exceed $1 trillion by 2010 at a time when China will also easily be the world's largest exporter.[48] The CCP expects China's per capita GDP to reach $3,000 U.S. by 2010, low by the standards of other industrialized nations, but nevertheless a threefold improvement in just ten years.[49] Other sources, such as the International Monetary Fund, estimate China's per capita income to be almost $10,000 per person.[50]

Goldman Sachs, Congressional Research Reports, and Chinese think tanks are working hard to forecast what a Chinese economy might look like in 2030 and beyond. A few of their findings concluded that China's economy will quickly overtake the U.S. by as early as 2013 and

[47] Geis et al., 140.
[48] Geis et al., 76, 86.
[49] "China's per capita GDP to hit US $3,000 by 2010," *China Daily*, 1 January 2008, http://chinadaily.cn/china/2008-01/04/content_6371868.htm.
[50] Geis et al., 86.

will grow to be 59 percent larger than the U.S. economy by 2025.[51] By 2030, per capita GDP is expected to exceed $20,000 per person, a figure on par with South Korea today.[52]

Natural resources, in terms of energy and food, will be required to fuel this growth. Findings suggest that automobile ownership in China is expected increase from 8.8 million presently to 53.4 million by 2035. Even with the projected developments in alternative energy sources and internal combustion engines, oil imports will rise from today's level of 260 million tons to 350 million tons by 2035.[53] This would put great pressure on the world's dwindling oil supply and could be a source of conflict in the geopolitical arena as China realizes that energy is what fuels its economic growth.[54] India and a resurgent Russia will have similar needs and will attempt to exert whatever power is required to secure their own energy sources for the future.

Past environmental missteps will diminish domestic food production. With an increasingly large middle class, there will likely be greater demand for more food choices and better quality selections. This will be compounded by the effects that an environmentally unconscious government has had on the environment. Great swaths of land in western China are undergoing desertification due to the coupling of climate change and poor environmental practices.[55] While China has begun to take a more active role in environmental issues, it may be impossible to reverse the damage to China's arable lands, resulting in an increased dependence on foreign-grown foodstuffs.[56]

[51] Geis et al., 57.
[52] Geis et al., 90-93.
[53] Geis et al.,, 90-93.
[54] Geis et al.,, 97.
[55] Geis et al., 141-142.
[56] Geis et al., 87.

Throughout all of this growth, China will increasingly seek to become more innovative. Their path to economic power has been created by an economy that is able to quickly and cheaply produce products designed or created elsewhere. In the past, they have relied on the other nations to do the innovation. This will change as China moves more of their resources into research and development; a move that opens the door for new and unexpected military threats on the horizon.[57]

Military Might

The Chinese military consists of the People's Liberation Army (PLA), the Chinese People's Armed Police force, and the People's Militia. The PLA is tightly controlled by the Central Military Commission (CMC) arm of the CCP and consists of an Army, PLA Air Force, PLA Navy, and the strategic missile forces or 2nd Artillery. The communist party General Secretary, currently Hu Jintao heads the Central Military Commission which is an organization consisting of the most senior military leaders and service chiefs all of whom are party members. The CMC is responsible for providing guidance and direction to China's 2.5 million person armed forces. The PLA consists of regular and reserve forces and its mission is to look outward in order to defend China against external threats, although it can be called upon to help with maintaining the peace within China. However, the Police force and the People's militia are the organizations whose main focus is inside China and they help defend the party against internal threats and maintain social order.[58]

Conventional Forces Now and in 2030. China has built much of its current military capability around an anti-access strategy that seeks to deny outside interference in what China refers to as

[57] Geis et al., 140-141.
[58] Global Security.Org, "China's Central Military Commission," http://www.globalsecurity.org/military/world/china/cmc.htm

its own internal affairs. Ballistic and cruise missiles are the mainstay of this current strategy with China deploying an estimated 1,070 short range ballistic missiles opposite Taiwan, a number that continues to increase at upwards of 100 per year. In addition China has imported highly-accurate cruise missiles from Russia and is well into producing their own hardware.[59]

China is also working on improving their current missile technology in order to reach beyond Taiwan. Anti-ship ballistic missiles, medium-range ballistic missiles, and intercontinental ballistic missiles (ICBM) are being built and fielded both with conventional and nuclear warheads. Currently, China has approximately 110 nuclear armed missiles, ranging from silo-based liquid fueled CSS-3 ICBMs capable of reaching the continental U.S., to road-mobile IRBMs used for deterring regional threats. The DF-31A ICBM, a solid-fueled model, is expected to be fielded this year and is capable of hitting targets in most of the world. China is also working on a road-mobile version of this missile. Moreover, China is researching maneuverable reentry vehicle technology which would greatly complicate the capabilities of missile defense measures. Nuclear powered submarines, diesel electric submarines, and guided-missile destroyers are the delivery platforms of choice for many of these new missile technologies, and China is expected to field the JL-2 submarine-launched ballistic missile (SLBM) aboard the JIN-class nuclear powered sub as early as 2010.[60]

By 2030, China will have greatly improved upon their ballistic missile and cruise missile capabilities. They will have more delivery options ranging from attack submarines to aircraft. Accuracy and penetration capability will have improved making it difficult for U.S. forces to

[59] Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 1-2, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm.
[60] Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 24-25, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm

successfully engage the Chinese military in defense of our interests without suffering major losses. Anti-radiation missiles and electromagnetic pulse (EMP) warheads capable of blinding a foe and severely hampering command and control and air defense will also make it difficult for any enemy to engage China's forces.[61]

The Army arm of the PLA is postured for domestic security and a Taiwan Strait conflict. The 1.25 million person army consists of over 6,700 tanks and 7,400 artillery pieces organized into 18 Group Armies. Most of these forces are deployed in the Taiwan Straits area.[62] While force modernization efforts have lagged those of the Air Force and the Navy, the PLA is looking to develop a net-centric approach similar to the U.S. Army's Future Combat Systems approach.[63]

Currently, the PLA Navy has a limited "blue water" capability. Their 72 combatant ships, 58 attack submarines, and 50 amphibious craft are built and designed for littoral operations, a capability required by their Taiwan anti-access strategy.[64] They do, however, seemed headed for the deep blue waters that will allow them to project power where necessary.

As China seeks to expand its influence in the Pacific and beyond; it will need aircraft carriers, nuclear powered submarines and underway replenishment capabilities. Though unlikely to have an indigenous carrier capability prior to 2015, by 2020 one can expect China to have at least a couple of carriers and the associated strike group assets.[65] Interestingly, they have just begun training a cadre of 50 Chinese Naval aviators even though they currently lack an aircraft carrier. Expectations are that this cadre may be being groomed to lead the Chinese Navy into the

[61]Geis et al., 120-121.
[62] Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008,* (Washington, DC: Government Printing Office), 50, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm
[63] Geis et al., 121-122.
[64] Geis et al., 112.
[65] Kenji Minemura, "China to start construction of 1st aircraft carriers next year," *The Asahi Shimbun*, 31 December 2008, http://www.asahi.com/english/herald-asahi/tk200812310046.html

carrier age.[66] Moreover, they are also working to complete a 60,000 ton Soviet Kuznetsov-class carrier that they bought in 1998, which at the time was only seventy percent complete. The carrier is expected to be used to train the first cadre of naval aviators.[67] For subsurface operations, they have recently purchased a dozen Russian Kilo-class submarines and are currently building their own SHANG and JIN class nuclear powered attack and ballistic missile submarines.[68] This combination of carriers and submarines will allow China to deploy for shows of force in regional hotspots and at resource chokepoints. Here they will have the capacity to exert their influence in attempts to keep lines of communication open to enable the uninterrupted flow of resources such as oil from areas like the Middle East and Africa.[69]

Currently, the China PLA Air Force consists of 2,300 combat aircraft. This number includes 1,630 fighters, 620 bombers, and 450 transport aircraft of which 490 are capable of engaging in a Taiwan scenario unrefueled.[70] Most of their combat attack aircraft are procured from Russia. The 300 SU-27s and SU-30s are augmented by a Chinese built version of the SU-27 called the J-11. China has also developed its own fourth generation fighter, the J-10, showing that it desires to have some degree of autonomy in the future on what it produces.[71] China is also working with Russia on new plasma-stealth technology and may be on the cusp of being able to adapt this technology to the J-10 without changing the shape. Next in line, is the J-12, an aircraft

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[66] Colin Clark, "China Starts Carrier Aviator Class," *DoD Buzz*, 15 October 2008, http://www.dodbuzz.com/2008/10/15/china-starts-carrier-aviator-class/.
[67] Kenji Minemura, "China to start construction of 1st aircraft carriers next year," *The Asahi Shimbun*, 31 December 2008, http://www.asahi.com/english/herald-asahi/tk200812310046.html
[68] Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 2-4, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm.
[69] Geis et al., 120-121.
[70]Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 50, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm.
[71] Geis et al.,, 113.

with F-22 characteristics.[72] All of this together paints a picture that China will be ready, willing, and able to field fifth and sixth generation aircraft by 2030, possibly on par with the U.S.

Global reach is one area where China has capability shortfalls. China's inventory has limited air-to-air refueling, airborne early warning capabilities, and large transport capability, but they are investing heavily in this area now. Through combined efforts with Antanov Aircraft Company and Airbus, they are developing new aircraft capable of filling these gaps in their strategic projection capability.[73]

Unconventional Capability Now and in 2030. China is making great strides in its ability to operate in the space domain in the areas of navigation, manned space flight, space lift, and space warfare. Though they rely on U.S. and Russian systems for precise navigation and timing (GPS/GLONASS), they are developing their own Beidou system and currently have a limited organic capability with four of these navigation satellites in orbit. The Beidou is thought to provide guidance for their ICBMs.[74] In the manned space arena, shortly after the 2008 Beijing Olympics, they launched their third manned space mission and have publicly stated that they wish to put a man on the moon by 2020. This seems well within their grasp as they have already shown the ability to put a spaceship in lunar orbit. Space lift capabilities are also on the rise. They already have plans to replace all of the foreign satellites they now use with ones produced solely in China by 2010. Their newest heavy-lift rocket, the Long March 5, should be able to lift heavy payloads into geosynchronous orbit by 2012.[75]

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[72] Geis et al., 121.
[73] Geis et al., 121.
[74] Geis et al., 122-123.
[75] Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 3, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm

These technological developments have also given China an offensive space capability. Alarmingly, they have publicly stated they will not be reluctant to engage in space warfare. According to PLA National Defense University book on space warfare written in 2005, "[China's] goal of a space shock and awe strike is [to] deter the enemy, not to provoke the enemy into combat. For this reason, the objectives selected for strike must be few and precise…[for example] on important information sources, command and control centers, communications hubs and other objectives. This will shake the structure of the opponent's operational system of organization and will create huge psychological impact on the opponent's policymakers."[76] In January 2007, they proved that they had the capability to carry out attacks like these when they surprised the world with a kinetic kill against one of their own decommissioned weather satellites in low-Earth orbit.[77] This development may pose one of the greatest threats to a nation seeking to influence China in 2030.

Additionally, China has its own design and fabrication capability capable of developing microsatellites that will be capable of co-orbital direct or parasitic attacks.[78] While these are space to space weapons, developments in directed energy research are producing systems capable of blinding or destroying satellites from ground stations using a combination of high power microwaves and high power lasers. China will be able to use some of this same technology in order to jam or spoof adversary uplinks and downlinks. Consequently, these

[76] Quoted in Ibid, 27-28,.
Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 25, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm
[78] Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 2-4, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm.

systems could be used for both space attack and local air defense.[79] Imagine this capability against U.S. state of the art fifth- generation electronics dependant fighters and bombers.

In the cyber warfare arena, China is already conducting computer network exploitation and attacks against the U.S., Britain, and France.[80] They are using these capabilities in joint exercises and see this as a way to severely hamper an adversary's freedom of action in the political, economic, and military realms.[81] The fact that they are conducting "peacetime" exploitation operations against various nation-states leads one to believe that they will not hesitate to use these capabilities in the event hostilities break out between China and her adversaries.

Leading-edge technologies such as nanotechnology, biotechnology, and human/machine computing are other areas that China is looking to exploit in the future. In the nanotechnology field, they have reached near-peer status with the U.S. in total government expenditure. This should come as a warning flag considering that five years ago they had completed little if any research in this area.[82]

Turning Capability into Action. Determining how China will use their military instrument of power discussed in this chapter is necessary to developing a deterrence strategy for 2035. Will they use their military power merely for deterring advances in the Taiwan Strait, or will the translation of their economic power into military power result in a China willing and able to

[79] Geis et al., 123-126.
[80] Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 3, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm.
[81] Geis et al., 126.
[82] Department of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2008*, (Washington, DC: Government Printing Office), 38, also available online at http://www.globalsecurity.org/military/library/report/2008-prc-military-power.htm.

project power around the world? The year-long Blue Horizons study addressed these questions, and posited the following regarding how China might use its capabilities in the future:

The study concluded that Taiwan will not be an overriding geopolitical issue. Increasing economic interdependence between China and Taiwan is likely to decrease the risk of conflict.[83] Further, China's military buildup directly across from Taiwan produces a powerful disincentive to attack for any aggressor nation, as it would be challenging for an aggressor to get within 1,000 km of China's shores.[84]

China's power projection capability beyond the Western Pacific will still lag U.S. capabilities, but they will continue to improve upon this with the buildup of their blue water navy, transport, and tanker aircraft. With at least three carrier battle groups by 2030, China will be able to muster a formidable presence in its Western Pacific backyard from Japan to Guam. These same capabilities will enable the patrolling of the Straits of Malacca, a critical sea line of communication connecting the Pacific and Indian Oceans. By 2030, China will be participating in joint exercises and will be taking a more proactive or lead role in crises, particularly in their areas of interest such as Africa and the Middle East. They may even maintain prepositioned stock in these areas and forward basing of troops.[85]

China's military will continue advancing their cyber and space warfare capabilities. In the cyber realm, doctrine will continue to evolve on how best to use some of their "one-shot" weapons such as malware and viruses. Some of these weapons could be targeted at basic U.S. infrastructure, but it is more likely that China would use these weapons against military targets in

[83] Geis, et al., 145. Geis' argument is taken, in part, from Mansfield who demonstrates that direct trade relationships significantly (both substantively and statistically) decrease the likelihood of conflict. See: Mansfield, Edward D., *Power, Trade, and War*, (Princeton University Press, Princeton NJ: 1994) pp. 126-150.
[84] Geis et al., 145.
[85] Geis et al., 143-145.

attempt to delay or confuse forces that rely on networked operations during conflict.[86] For example, China will be able to leverage a combination of high power microwaves, direct ascent kinetic kill capabilities, and electronic warfare jamming of uplinks and downlinks will combine to produce a vast counter space capability.[87] Power projection will take on new meaning now and into the future, as China seeks to use space denial methods and cyber attack to project power outside of the Asian region.

[86] Geis et al.,, 145.
[87] Geis et al.,, 124-125.

Observe calmly; secure our position; cope with affairs calmly; hide our capacities and bide our time; be good a maintaining a low profile; and never claim leadership.[88]

Hu Jintao, President of China

Chapter 4

Considerations for Developing a Deterrent Strategy for China in 2035

This chapter describes what the deterrence landscape would look like with the China described above. This chapter first addresses the friction points that may exist as China rises to near equal power. It then examines a few key differences between the Cold War deterrence environment and the environment that will present itself in 2035 and beyond.

Friction Points

Though U.S. and Chinese relations are currently stable a rising China will likely be an unstable China to some degree since the emergence of a new great power "is always a destabilizing geopolitical phenomenon."[89] Foreign policy experts like Bruce Russett and Allan Stam assert that "the period of transition from one great power system leader to another is marked by tremendous potential for instability and cataclysmic conflict as the challenger catches up and ultimately surpasses the power base of the previously dominant state."[90] Germany's rise to power in the aftermath of WWI provides an example of this happening in the past. In the

[88] This is the English translation of what is commonly referred to as the 24 Character Strategy. Hu Jintao is reiterating the strategy put in place by Deng Xiaoping. Deng developed this strategy in order to guide present and future leadership in restoring China's prominence on the world stage by biding their time and waiting for the proper moment to assert themselves as a world leader. As quoted in Geis et al., 55.
[89] Layne, 291.
[90] Bruce Russett and Alan C. Stam, "An Expanded NATO vs Russia and China," in *The Use of Force*; *Military Power and International Politics*, ed Robert J Art and Kenneth Walz, (Oxford: Rowman and Littlefield Publishers, 1999), 307-308.

future the world may see a very different China as it surpasses the U.S. in terms of economic and quite possibly military power.

China's economic power already dwarfs the economies of Japan, Korea, Vietnam, and Australia. One can expect China to continue to question the need for a U.S. presence in the area, a presence that for years sought to provide security and free trade guarantees to these Asian democracies. Moreover, India, the world's largest democracy, will be on its own rise to power further complicating an environment where balancing and bandwagoning strategies among the lesser powers are likely to occur.[91] All of the above combined may result in a fragile international climate where conflict could interrupt what has been a relatively calm time.

This power swap will result in a much different strategic context in the geopolitical realm and that, in itself, is cause for concern as the world sees a very different China emerge. Paul Huth and Bruce Russett's study, *What Makes Deterrence Work,* looked at 54 deterrence cases from 1900-1980. One of their findings was that "past behavior will provide little or no guidance for predicting future behavior."[92] Context was more important in determining whether a nation went to war because deterrence failed.[93] Similarly, just because China has peacefully co-existed with the U.S. until 2035 does not mean that they will continue to do so if the context changes, something which is likely to happen as China rises to major power status.

The earlier context of economic interdependence that served to stabilize the two powers may be replaced by the context of resource competition between China and other nations in the

[91] Geis et al., 139. "Balancing" and "bandwagoning" are terms used to describe how states react to each other according to the realist theory of international relations. Bandwagoning occurs when weaker states join larger states in an effort to secure their position. Conversely, balancing occurs when two or more states form a coalition or alliance in order to challenge the preeminence and check the power of a larger state. See Waltz, Ken, *Theory of International Politics*, (McGraw Hill, Boston, MA: 1979) and Walt, Stephen M., "Alliance Formation and the Balance of World Power," *International Security*, Vol. 9, No. 4, Spring 1985, pp. 3-43.
[92] Huth and Russett, 503.
[93] Huth and Russett, 503.

region. A possible conflict over dwindling world resources may be the most likely reason the U.S. could find itself faced with the requirement to develop a comprehensive deterrence strategy with China in 2035. As pointed out in the previous chapter, China's demand for petroleum will greatly increase as a rising middle class puts an additional 40 million cars on the roads between now and 2035.[94] This will put unprecedented pressure on the world's oil supply at a time when India will be on its own economic upswing with a resurgent Russia in trail. China's rising middle class will also demand better food, housing, health care, education, and other products that many in the U.S. take for granted. This will occur in a country already suffering from problems due to pollution and poor natural resource management strategies. Desertification, a condition where formerly productive farm land is made unusable due to climactic variations, is already a problem in China and will continue to be a challenge for China's leadership as it seeks to feed its population. China's leadership, ever mindful of the need to fulfill the "mandate from heaven" in order to stay in power, will be under pressure to do whatever necessary to provide its population with the resources it needs.[95]

The U.S. has seen this scenario before in Russia. Russia rose to great power after the end of WW II and the U.S. was able to keep its aggressive tendencies in check in Europe with the threat of nuclear warfare. So why not use a similar strategy with China? If the threat of nuclear warfare was enough to keep Russia in check then it should work against a rising China as well. There are, however, some important differences between the Cold War deterrence paradigm and what the world may see in 2035 that need to be considered in formulating deterrence strategies.

Key Differences from the Cold War Deterrence Paradigm

[94] Geis et al., 141.
[95] Geis et al., 139-143.

In 2035, Thomas Friedman's idea of a Flat World will be 30 years old. In his 2005 book he argues that things such as outsourcing, offshoring, open-sourcing, and the ability to effortlessly stay connected through the internet will result in a new geopolitical and economic paradigm as "new players, on a new playing field, develop new processes and habits for horizontal collaboration."[96] The new players are those people worldwide who are connected to each other through the internet and are now a part of the global economy. The playing field is the internet itself. And the new processes and habits are the methods that people will use to get their work done. The world will be interconnected in ways that we are just now starting to understand.[97] One has to look no farther than the recent U.S. economic crisis to see this new paradigm in action. What started as a credit and mortgage crisis in the U.S. quickly spread to the rest of the world due to the economic connectedness that exists today and will likely exist to a greater degree in the future.[98]

This interconnectedness of people, nations, and economies did not exist during the Cold War. This connected environment provides us more insight into a possible future adversary than we ever had of Russia. One needs to look no further than the education and business sectors to see examples of this. Currently there are an abundance of education exchange programs that exist between China and the U.S. For the 2007/08 school year alone, over 81,000 students from China were enrolled in U.S. universities and over 11,000 U.S. students were enrolled in Chinese universities.[99] In the business world, over 200 U.S.-based businesses have manufacturing plants

[96] Thomas L. Friedman, *The World is Flat: A Brief History of the Twenty-first Century*, (New York: Farrar, Straus and Giroux, 2005), 181-182.
[97] Friedman, 192-184.
[98] George W. Bush, President of the United States, (address concerning financial turmoil and the world economy, Federal Hall National Memorial, New York, NY, 13 November 2008). Also available on line at http://www.whitehouse.gov/news/releases/2008/11/20081113-4.html.
[99] The Institute of International Education, "Open Doors, Online Report on International Education Exchange 2008 Fast Facts," http://www.opendoors.iienetwork.org/.

and corporate offices spread throughout China.[100] Likewise, China is heavily leveraged with U.S. debt and it relies on the U.S. as its biggest trading partner.[101] Though some of this may change if relations with China sour, these interactions have allowed citizens of both nations to gain a better understanding of each other's culture, government, and decision making processes.

This interconnectedness will have at least two effects. First, it will help to keep conflict at a minimum if we maintain these connections due to the idea that the economic costs of aggression for both sides will increase making each nation more susceptible to counter coercion strategies. Huth and Russett found that maintaining strong mutual interests such as economic ties was an important contributor to deterrence.[102] And second, it will provide strategists on both sides a better understanding of how each other thinks and acts through its power to enhance the deterrence principles of communication, intelligence, perceptions, and rationality, mentioned earlier in chapter two. This will result in more accurate cost/benefit calculations of a given deterrent action.

The rapid rate of technological change that has dominated the latter part of the 20th century is another major difference between the deterrence environment of the Cold War and the deterrence environment the strategist may face with China in 2035. In 60 years the world went from room size computers able to perform simple calculations, to handheld computers able to handle complex computations and access tremendous amounts of information wirelessly via the

[100] United States General Accounting Office, Report to Congressional Committees, US Companies Views on China's Implementation of Its Commitments, Report to Congressional Committees, (Washington, DC: General Accounting Office, 2004), 30-32. Also available online at http://www.gao.gov/new.items/d04508.pdf.
[101] According to the U.S. Treasury Department, as of October 2008, China held $718.1 billion in U.S. Treasury securities. Information available online at http://www.treas.gov/tic/mfh.txt.
[102] Huth and Russett, 524.

internet. Moore's Law,[103] the term used to explain the exponential growth of computer processing power at low cost, leads us to a situation where computing power will continue to become even cheaper and more ubiquitous. Combined with a flat world, everyone will have access to cheap and very powerful computing power. Technological change will occur at a rate unseen in previous ages with some suggesting that more change will occur in the next 25 years than have occurred in the past century.[104] So what does a flattening world and rapid technological change mean for deterrence? It means that both nation states and individuals will have access to technologies that the world has not even seen yet--technologies that can and will likely be used to threaten other nation states and individuals.

This new environment could result in increased nuclear weapons proliferation over what the world has seen in the past. Small nations with easy access to technology will continually look to reduce their susceptibility to coercion or outright sovereignty challenges. This will impact deterrent strategies as nations have to deal with multiple actors on what used to be a two-party stage.

Ballistic missile defense (BMD) may proliferate as well. What was once thought destabilizing[105] to the "stable balance of terror" that existed between the U.S. and USSR and

[103] Since the invention of the integrated circuit in 1958, the amount of transistors one can place on an integrated circuit has doubled every two years. Moreover, the cost has decreased exponentially as well.
[104] Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology*, (London: Penguin Books, 2005), 7-14. In the briefing "Shift Happens" given to the Sony corporate staff this summer, the claim made was that more information will be generated this year than in the last 5000 years. Further, the amount of information doubles about every 2 years, which means that for a college student, by the time they reach the status of being a senior, nearly seventy-five percent of what they learned as a freshman will be obsolete. Video available on-line at http://shifthappens.wikispaces.com/
[105] BMD was thought to be destabilizing to a MAD doctrine. The logic was that if the US built a BMD system, Russia would launch a first strike attack just prior to the system being brought on-line. If they didn't, they ran the risk of being susceptible to a US first strike since a fully functioning US BMD system would make the US somewhat invulnerable to a counterattack by Russia. Alternatively, if the system was completed without incident, it might spark an arms buildup by a Russia seeking to build enough nuclear missiles that could overwhelm the US system.

formed the cornerstone of the mutually assured destruction may now become more commonplace as nations seek protection from rogue states who possess nuclear weapons. Granted, BMD systems are not foolproof. They are not currently designed to defend against cruise missiles nor will they keep a country safe from a ship-borne nuclear weapon sailed into the harbor of a major city. They will, however, be useful in a denial deterrence strategy. If the U.S. employs a system that can deny an adversary the benefits he seeks through threats of nuclear missile strikes, the adversary may think twice before investing in systems that could be rendered ineffective. The trick will be in reassuring other nations that the BMD system is not meant to reduce the general deterrence that exists between the large nuclear armed states.[106]

The temptation to conduct warfare in or from space will continue to increase. Reliance on space has greatly increased since the days of the Cold War. Admittedly, the final frontier was used in many ways during the Cold War. Spy and communication satellites are nothing new. ICBMs would have traversed space had they been used. High altitude nuclear detonations were also planned to take out the enemy's inbound missiles and would have likely destroyed or degraded communication satellites as well.[107] What is new, however, is how much the world relies on the use of space assets for navigation, timing, imagery, and communication. Moreover, rate of technology change now and in the future will allow for cheaper and faster space lift capabilities as well as smaller satellites with capabilities far greater than what we have now.[108]

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[106] Thomas Payne, *The Great American Gamble: Deterrence Theory and Practice from the Cold War to the Twenty-First Century*, (Fairfax, VA: National Institute Press, 2008), 219-252.
[107] Union of Concerned Scientists, "History of Russia's Anti-Ballistic Missile System," http://www.ucsusa.org/nuclear_weapons_and_global_security/missile_defense/policy_issues/history-of-russias.html.
[108] For more on Operationally Responsive Space, see Department of Defense report, *Plan for Operationally Responsive Space: A Report to Congressional Defense Committees,* (Washington DC: Government Printing Office), 1-17 also available online at http://www.responsivespace.com/conferences/rs5/4=17=07%20ors%20plan.pdf, and Les Doggrell, "Operationally

The capabilities that space provides to modern nations may very well prove to be their Achilles heel during future conflict as adversaries seek to deny each other the use of space either partially or in its entirety. China and the U.S. have already proven they each have the capability to precisely attack assets in space by kinetic means. Additionally, as mentioned in chapter three, high power ground-based lasers will soon be able to inflict damage to satellites without the deleterious space debris effects of kinetic kill mechanisms. How to deter a rising China from denying access to space capabilities will have to be thoroughly addressed.

The ability to use cyberspace as a means of warfare is the final key difference between what deterrent strategists face now compared to what they faced in the Cold War. Operations in this area have evolved from disjointed and uncoordinated nuisance attacks to state sponsored coordinated attacks or probes on other nation states or international institutions. In 2007 alone, the Department of Homeland Security reported over 80,000 attacks on Pentagon networks and 37,000 attacks on other government computer systems.[109] Consequently, hackers already have the ability to infiltrate critical infrastructure control mechanisms through cyberspace for the purpose of shutting down electrical power grids. And some economists believe that an adversary could reduce 70 percent of a regions economic activity if they were able to shutdown the power grid in an area like the north or southeast for ten days through a cyber attack.[110] More disconcerting is the fact that many of the processors that control U.S. systems are manufactured

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Responsive Space: A Vision for the Future of Military Space," *Air and Space Power Journal*, Summer 2006, available online at http://www.airpower.maxwell.af.mil/airchronicles/apj/apj06/sum06/doggrell.html.

[109] Greg Bruno, "The Evolution of Cyber Warfare," *Council on Foreign Relations Backgrounder*, Feb 27, 2008. http://www.cfr.org/publication/15577/evolution_of_cyber_warfare.html.

[110] Greg Bruno, "The Evolution of Cyber Warfare," *Council on Foreign Relations Backgrounder*, Feb 27, 2008. http://www.cfr.org/publication/15577/evolution_of_cyber_warfare.html.

in places like China. The concern is that continued reliance on imported processors opens the U.S. up to intrusion through backdoors programmed into the systems for future use.[111]

China continues to make great strides in the area of offensive cyber warfare and has even leaked plans that it desires to have global electronic dominance by 2050. Currently it is developing its own cadre of cyber warriors sometimes even staging competitions to determine who the best and brightest hackers are and then recruiting them for military service.[112] The U.S., of course, is developing its own cyber warfare capabilities, but that does not mean that it should ignore the role that a deterrence strategy could have on preventing attacks like those mentioned above.

Suffice to say that the context surrounding Cold War deterrence strategies is remarkably different than what we see now and will see in the future. For every deterrent strategy in 2035, there will likely be a counter coercion strategy available to the adversary through some other domain, a domain that did not exist during the Cold War. Strategists will have to develop conventional, nuclear, space, cyber, and perhaps even biowarfare and nanowarfare deterrent strategies. Fortunately, much of the thinking that went into developing a nuclear deterrence strategy will be useful in designing these asymmetric deterrent strategies. However, it will not be as simple as stating that if country X attacks the U.S. with a massive cyber, bio, space, or nano attack that we will respond with nuclear weapons. Threats like that will lack credibility due to the psychology surrounding deterrence theory, a subject touched on in the next section.

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[111] U.S.-China Economic and Security Review Commission, *2008 Report to Congress* (Washington, DC: Government Printing Office, 2008), 167. Also available online at http://www.uscc.gov/annual_report/2008/annual_report_full_08.pdf.

[112] Tim Reid, "China's cyber army is preparing to march on America, says Pentagon," *Times Online*, September 8, 2007, http://technology.timesonline.co.uk/tol/news/tech_and_web/the_web/article2409865.

Chapter 5

Deterring China in 2035

The following discussion begins with a look at what factors will influence China's cost/benefit calculations. It then addresses the role that nuclear weapons will play in future deterrent strategies, answering the question as to whether nuclear weapons can deter across other domains that will be in play in 2035 such as cyber and space. The section also provides some considerations for how to deter China in the space and cyber domains by using some of the same principles that work for nuclear deterrence. Next, the section looks at the elephant in the room – economic interdependence – offering some thoughts on how economic linkages affect the context of deterrence. Finally, the section examines the forces at work in an extended deterrence strategy for U.S. allies in the region.

Decision Making and Cost/Benefit Calculus

As noted in chapter two, before a strategist can develop a strategy that relies on an adversaries cost/benefit calculus, he must have a firm understanding of how that adversary makes decisions. A few factors may make this easier than it has been in the past. First, by 2035, China is expected to be on its sixth generation of leaders since Mao. Thus far, the transitions of power have been marked by stability and peace. Each preceding generation has mentored and groomed their successor. This has allowed them to instill some core ideological beliefs of how best to lead China into the future in accordance with the 24 Character Strategy discussed earlier. The predictability of a long line of accession that shares similar ideological beliefs is helpful for the strategist in that it removes some of the variables that might affect the decision calculus of future leaders. Second, the strategist of 2035 may also have a better idea of how the Chinese

leadership thinks due to the level of transparency that currently exists and should expand as they become a more open society and continue to embrace capitalism with "Chinese characteristics." This level of understanding is in stark contrast to the environment U.S. deterrent experts faced in the Cold War. The Blue Horizon team believes that "China will reach 2030 with a well-tested group of leaders whose decisions may well be predictable based on their objective to sustain the mandate of the Chinese populace.[113] Third, the business and education exchange programs addressed earlier will also help with our understanding of their decision making processes and decision calculus. Granted, all of the factors above cut both ways since deterrence depends also on the adversaries perception of our decision calculus just as much as we depend on understanding theirs, but in the end it should be a net benefit to crafting deterrence strategies over what existed during the Cold War.

Knowing who is responsible for making the decisions will be equally important. The Chinese President will undoubtedly be influenced by other members of the communist party. They collectively will be ever sensitive to their ability to keep the lower classes content and will keep a keen eye on maintaining the "mandate from heaven" that allows the lower class to subjugate themselves to the party. Moreover, party membership is expected to double by 2030 from 74 million to 150 million with many of the new members sprouting up from the new wealth that will mark China's future growth.[114] Therefore, strategists would do well to consider how China's concern for maintaining wealth and status for its people play into a deterrent strategy. According to the some, "stability and wealth will be more important national values than freedom and democracy."[115] By 2035, public opinion will be an area that the CCP must address

[113] Geis et al., 136.
[114] Geis et al., 137.
[115] Geis et al., 138.

and an area that deterrent strategies can target. This may be even easier in a flat and connected world. The trick will be trying to get around China's penchant for Sun Tzu ideals of deception and deceit that sometimes seem to permeate their behavior.

The Limits of Nuclear Deterrence

Nuclear weapons form the cornerstone of any deterrence strategy with a near peer or peer competitor such as China and will continue to play an important if somewhat limited deterrence role. During the Cold War, a large conventional capability coupled with robust nuclear attack capabilities, were both necessary and sufficient in forming deterrence strategies. That is not to say that all the deterrent strategies worked, but just that these were the main tools of deterrence. In the future, they will still be necessary as China continues to value their inherent deterrent capability.

China is modernizing its nuclear arsenal. The continued development of road-mobile solid fueled DF-31 ICBMS and SLBMs will continue to provide them a minimum level of deterrence in accordance with their no first-use policy. Chinese policy seeks to deter other nations from using nuclear weapons against her in a mutual deterrent context similar to the one between the U.S. and the USSR during the Cold War. China seeks to continue using a counter-value strategy, one where adversaries are assured through the use of China's survivable second strike capabilities, that they will suffer some punishment if they attack China with nuclear weapons first.[116] Therefore, any deterrence strategy against a rising China must first address the worst case scenario of which nuclear weapons play a central deterrence role.

[116] Yao Yunzhu, "Chinese Nuclear Policy and the Future of Minimum Deterrence," *Strategic Insights* Volume IV, Issue 9 (September 2005), Center for Contemporary Conflict, Naval Postgraduate School, Monterey CA, http://www.CCC.nps.navy.mil/si/2005/Sep/yaoSep05.asp.

The natural question now concerns the impact future technology will have on current nuclear employment systems. The rapid rate of technological change, global interconnectedness, and the emergence and proliferation of new technologies may render parts of the existing U.S. nuclear triad[117] (or future China triad) systems obsolete. For example, current ground-based ballistic missile defense systems are designed to engage a limited number of inbound ballistic missiles. Future systems are likely to be more robust. Today, if an adversary launches multiple ICBMs at a given target, there is a good chance that some number of warheads will get through the shield to their respective targets. Absent improvements in these ballistic missiles, future defense systems may significantly reduce this threat, providing some deterrence by denial. Further, defenses which are capable of destroying inbound missiles are often capable of destroying incoming aircraft. Technological advances in defense technology could imperil parts of the existing nuclear triad.

So does that mean that missile and bomber based nuclear weapons will be irrelevant in 2035? Not necessarily. The scenarios described above depend on the assumptions that first, defense systems, if proliferated, would be fool-proof, and second, that these systems would not be able to be countered by the use of advanced technology in future missile and aircraft designs. Few things in this world are truly fool-proof. Moreover, the history of warfare is replete with each side seeking to counter the other side's latest advantage, either through symmetric or asymmetric means. As nuclear weapons and missile defenses continue to proliferate, there may likely be pressure to develop new missile or bomber delivery systems that are able to penetrate

[117] Nuclear triad refers to the three strategic nuclear delivery platforms the U.S. relies on for strategic deterrence and consists of submarine launched ballistic missiles, intercontinental ballistic missiles, and long-range bombers.

future defense systems. Admittedly, the nuclear triad as we know it today may have to change in form, but it is unlikely to change in function. If there is one area that the U.S. (or China) should not accept any risk, it is with nuclear weapons. It would be unwise for the U.S. to unilaterally disarm itself of nuclear weapons in hopes that missile defense systems would keep it safe from all nuclear missiles. One nuclear weapon can do a substantial amount of physical and psychological damage and it is doubtful that a nation would accept the level of risk required to rely on a flawless missile defense system in order to obviate the need for a method to hold another nation at risk with its own nuclear weapons. For the foreseeable future, nuclear weapons will continue to assure each nation's sovereignty through the idea of general deterrence.

However, we are now entering into a time where there are many other tools or weapons of mass destruction, maybe not on the scale of nuclear weapons in their destructive ability, but definitely able to massively disrupt a nation's freedom of maneuver. While nuclear weapons are necessary for deterring China, they alone are not sufficient.

For purpose of discussion, consider the following questions. Are we to believe that the U.S. would seriously consider retaliating against a massive cyber attack on our power grid with nuclear weapons? What kind of response would the public demand if one day a large sector of the U.S. like the northeast woke up to a world without power due to a massive cyber attack that targeted the electric grid? Would it matter if it took 30 days to get the systems back on line? What if thousands of people died in hospitals unable to provide the power necessary to keep patients alive until power was restored?

Alternatively, consider an attack against our space assets that might take out the U.S. global positioning service (GPS) constellation or our ability to communicate globally with our

forces through our space dependant command and control system. Banking, commercial navigation, and commerce would all be greatly affected. U.S. commanders would have difficulty coordinating the movement of forces. The traditional nuclear triad would also be greatly affected. If a space attack on this scale were to happen, would a nuclear response be warranted?

Probably not, since nuclear weapons have limited capability to cross-domain deter in these areas. Simply stating that any massive cyber attack will be met with nuclear retaliation, or for that matter, a massive conventional strike may fall on deaf ears if China does not believe the U.S. has the will to follow through on the threat. Of course the next question comes down to what the definition of massive is…and it is at this point that we begin discussing effects.

Should it be the means or the effect of an attack that determines how one might threaten to respond? If it is a matter of effect, then perhaps it would be permissible to take the genie out of the bottle again. But if and only if presented with a capability or weapon type that can devastate instantaneously on a large scale and at long distances like only nuclear weapons can. So what about chemical or biological weapons? Chemical weapons typically have very localized effects and tend to dissipate quickly making them destructive, but not on a massive scale. And while it is not difficult to imagine a scenario where the U.S. is attacked with a biological weapon which takes a few months to spread as a pandemic, but in the end kills millions, the difference between a nuclear weapon and a biological attack such as this is still considerable. While destructive, attacks like these still do not have the same instantaneous or massive effects that come with a nuclear explosion.[118] Furthermore, going back to our questions of massive electric grid attacks that possibly end up killing thousands of hospital patients, these deaths would

[118] Goodpaster et al., 10.

neither be instantaneous nor massive, at least not on the scale of the damage that a single nuclear weapon could inflict. Cyber, space, and even biological and chemical attacks cannot generate the same effects that nuclear weapons can and thus are not of the same currency. In other words, as Kenneth Waltz puts it, "let the punishment fit the crime" in terms of proportionality.[119] For a threatened action or response to be credible, it has to applicable to the situation at hand. Thus, threats of nuclear response to these types of attacks have limited utility in future deterrence strategies for China.

The preceding discussion is in no way meant to argue that nuclear weapons are no longer relevant in a deterrent strategy for China. Maintaining a nuclear deterrent capability will be necessary for the U.S. as long as China has nuclear weapon capabilities and a large conventional force. And into the foreseeable future, it looks as if China will continue to rely on nuclear weapons for their strategic defense.

Cyber and Space Deterrence

The principle of general deterrence that kept the U.S. and USSR from waging nuclear Armageddon should also work to prevent outright space Armageddon. Recent satellite shoot downs were publicly heralded in attempts to ensure each side knew the other's capabilities. It was reminiscent of the nuclear weapon testing that took place during the Cold War in that it proved the capability and advertised it at the same time. There was no doubt about what would happen if decision makers made wrong decisions. Similarly, both sides will suffer in all-out attacks on space assets either through the use of kinetic anti-satellite missiles, lasers, or high-altitude nuclear bursts. Publicly stating a policy that a massive attack in space will be met in

[119] Kenneth N. Waltz, "Nuclear Myths and Nuclear Realities," in *The Use of Force: Military Power and International Politics,* ed Kenneth N Waltz and Robert J Art, (New York: Rowman and Littlefield, 1999), 97.

kind should suffice in increasing the cost-to-benefit ratio. Therefore, a massive all out space attack is not what a deterrent strategy should focus on. Instead the strategist should look at a strategy of deterrence by denial in an immediate and narrow deterrence context.

Consider a scenario that has the U.S. waging war to maintain access to oil reserves in the Middle East. If the country we are at odds with is a close ally of China, China may be tempted to threaten the U.S. with an attack on selected space assets, say GPS for example, in an attempt to extend deterrence to one of its allies. So how does the U.S. deter China from making good on their deterrent threat? Using denial deterrence, the U.S. would need to be able to show that it could fight through an attack on its GPS constellation. Doing so would require the U.S. to either make its constellation of satellites invulnerable to any type of attack, have the capability to quickly replace any satellite damaged or destroyed, or have backup navigation systems on both weapons and aircraft that will allow the systems to carry out their missions absent GPS guidance capabilities.[120] This type of strategy lowers the benefit that China would receive from this kind of attack since the U.S. would still be able to meet its objective as it successfully fights through an attack. It also increases cost as an action like this might have repercussions internationally considering how much the international community relies on these types of systems for banking and navigation. On the U.S. side, this type of strategy lowers the U.S. cost of ignoring China's deterrent threat even though it might mean the loss of some amount of GPS capability. Ultimately, though, the context of the conflict would determine how China or the U.S. makes their cost benefit calculations.

[120] Invulnerability is likely cost prohibitive and responsive space is currently in the works. Perhaps the least costly is the third option, one that to date, the military is moving further away from considering the reliance of the Army's new Future Combat System on space assets and the Air Force's reliance on GPS for aircraft and weapon guidance. As late as 2006 the Air Force considered removing the inertial measurement unit from the guidance kit on the JDAM. This would have required the JDAM to rely solely on GPS signals for guidance. Maj Jim Barnes (Air-to-Ground Weapon System Evaluation test lead, 86 Fighter Weapons Squadron), interview by author, 3 July 2008.

Deterrence in the cyber realm brings up issues of communication and credibility. The reason nuclear deterrence worked so well was because the world had seen its destructive force at work. All sides knew what possibilities awaited them if they choose to ignore deterrent threats. So how can this inform a cyber deterrent strategy? Granted the world has seen what a cyber attack can do to a nation the size of Estonia, but the effect of that attack was more disruptive than massively destructive. For China to believe any threat that we make in order to deter them from attacking our cyber networks the U.S. needs to do a few things. First, cyber attack capabilities need to be publicized in a way that leaves no room for doubt about the U.S. ability and will to impose severe punishment on a China that seeks to disrupt or destroy our freedom of maneuver through cyberspace. There was no question in anyone's mind how devastating a nuclear attack could be and how devastating a counter attack would be. This same picture needs to be painted in the minds of China's leaders with regards to cyberspace.[121] Granted, this would require the U.S. to open the "green door" behind which the ultra secret cyber attack capabilities lay, but it may be necessary to do so in order to establish deterrence in this domain.[122] Acknowledging capabilities like this strengthens the credibility of threats meant to deter. Not doing so leaves too much to chance as the actor being deterred is left to wonder if the cost of his actions would really be all that high. Second, a deterrent strategy should include some degree of automaticity. Automaticity involves putting measures in place, either technological or bureaucratic, that

[121] Bob Gourley, *Towards a Cyber Deterrent*, (draft paper for the Cyber Conflict Studies Association, 29 May 2008), http://www.ctovision.com/cyber-deterrence-initiative.html.

[122] This specific issue was brought up by the Senate Armed Services Committee in their report on the National Cyber Security Initiative. The committee's chief concern was "that virtually everything about the initiative is highly classified…It is difficult to conceive how the United States could promulgate a meaningful deterrence doctrine if every aspect of our capabilities and operational concepts is classified. In the era of superpower nuclear competition, while neither side disclosed weapons designs, everyone understood the effects of nuclear weapons, how they would be delivered, and the circumstances under which they would be used. Indeed, deterrence was not possible without letting friends and adversaries alike know what capabilities we possessed and the price that adversaries would pay in a real conflict. Some analogous level of disclosure is necessary in the cyber domain." For the entire report, see Senate Committee on Armed Services, *National Defense Authorization Act for Fiscal Year 2009*, 110 Congress 2d sess., 110-335, 2008. Available online at http://thomas.loc.gov/cgi-bin/cpquery/T?&report=sr335&dbname=110&.

respond without intervention to some action like an attack on or through cyber thus taking any ambiguity out of deterrent threats, leaving the decision to act in the hands of the aggressor be it China or any other entity. This would enhance the credibility of the deterrent threat, as the response would happen at speeds humans could not stop. Third, the U.S. needs to develop methods and procedures that allow it to fight through an attack and leverage the strengths of a denial deterrence strategy similar in function to the discussion on space. If you take away any perceived benefit China might get from using cyberspace, it may reduce their propensity to use it.[123] Finally, the U.S. needs to openly communicate what actions it will take given an attack on its cyber assets or using cyberspace to affect its freedom of movement. Russia knew we targeted them and understood from public pronouncements that we would respond to nuclear aggression with an overwhelming response. These types of declaratory policies assure both allies and adversaries of our commitment.[124]

Unlike nuclear threats, cross-domain deterrence may work between the space and cyber domains. In the earlier discussion, the ability to cross-domain deter came down to the credibility of the threat with the credibility of the threat being influenced by the effect of an executed threat. For example, attacking an adversary's space communications system will impact their ability to conduct command and control across the globe. The same effect might be had by attacking their command and control networks via cyberspace. Moreover, an adversary is not just limited to government or military systems but can also impact the private sector with attacks through space or cyber. Attacking a private communication satellite used for relaying banking information by jamming its up or down links could have the same effect as hacking into a secure financial

[123] Thomas Barnett, "Deterrence in the 21st Century," in *Deterrence 2.0: Deterring Virtual Non-State Actors in Cyberspace*, Study prepared for USSTRATCOM Global Innovation and Strategy Center's Strategic Multi-Layer Analysis Team, eds Carl Hunt and Nancy Chesser, 10 January 2008, 26.
[124] Goodpaster et al., 31-32.

website and covertly transferring funds out of shareholder accounts. This would likely result in widespread fear about the security and viability of the banking system causing some degree of panic in the population. Using these two cases as a frame of reference, the U.S. could threaten China with a cyber attack on certain cyber dependent systems if they attack our space systems. Since the effects of certain space and cyber attacks are similar, this may enhance the ability of the U.S. to conduct cross-domain deterrence between these areas.

Economic Interdependence; the Elephant in the Room

Economics will play an important role in a future deterrent strategy with China. Being able to influence a country economically can be a very power weapon in itself. It can be used in making deterrent threats in either a general, immediate, or extended deterrence context. For instance, if the U.S. wants to prevent China from doing something China wants to do, the U.S. can certainly threaten to take some type of action that might damage China's economy or the linkages that exist between the trading partners. A superior strategist would attempt to develop a strategy that would threaten the "mandate from heaven" given to the leaders from the people. The government may be very susceptible here if they thought that a threatened action might impact their ability to make the commoners happy. But what of the commoners on the other side of the Pacific? Would not the economic interdependence between the two nations addressed earlier in this chapter prevent these threats from seeming credible? And why would the U.S. cut off its nose to spite its face? Those are two very relevant questions, but in the end, it will still come down to a cost benefit analysis on both sides. There may be times when China might be willing to suffer the economic consequences of a U.S. threat that comes to reality. At the same time, the U.S. might be willing to accept the cost of having to follow through on a threat that would also hurt the U.S. economy. To rule out economic threats between economically

interdependent nations or assert that economic interdependence makes two nations immune to deterrent threats or conflict would be naïve.

The discussion above has revolved around ideas of general, immediate, and denial deterrence. Next, it turns to what the strategist should consider when developing an extended deterrence strategy for U.S. allies in the region.

A strategy of extended deterrence is a bit more complicated. Currently, the U.S. extends nuclear deterrence to its allies in the region. Japan and South Korea, for instance, do not have their own nuclear arsenals because they are covered under the U.S. nuclear umbrella. There is also some degree of general conventional deterrence occurring as well.[125] The forward basing of U.S. troops in these two countries is critical to the credibility of extended deterrence. China knows that if it takes aggressive action against either of these countries they would encounter U.S. forces stationed in these countries almost guaranteeing U.S. action and involvement.[126] This concept worked well in Eastern Europe during the Cold War as the USSR realized that any aggressive move made in Europe would automatically bring the U.S. into the picture due to the fact that an attack on Europe would not be too different from an attack on the U.S. mainland. The principles that ensured its success in Europe are also at work in these areas.[127] Taiwan, however, is another story.

By 2030 Taiwan may be a moot issue as it continues increasing its ties both economically and diplomatically with China. And the economic interdependence between the two nations may

[125] US Congressional Research Service, *US Conventional Forces and Nuclear Deterrence: A China Case Study RL3360*, (Washington, DC: Congressional Research Service, August 11, 2006), 19-20.
[126] Schelling, 47-48.
[127] Layne, from Preponderance to Offshore Balancing, 295. Layne states that the principles for effective extended deterrence are, "bipolarity; a clearly defined, and accepted, geopolitical status quo; the intrinsic value to the defender of the protected region; and the permanent forward deployment by the defender of sizeable military forces in the protected region."

prove to be the best deterrent strategy since interdependence typically tends to add a degree of stability between two countries.[128] The U.S. should continue to foster trade and exchange agreements with Taiwan in a continued attempt to make it an economic powerhouse. China may be hesitant to take outright offensive action against a nation with which it has strong economic ties. However, economic interdependence may not guarantee freedom from coercion if China determines that the cost benefit ratio falls in favor of attack.

The intent of this chapter was to present the reader with a glimpse of what deterrence might look like against a rising China in 2035. It was not meant to prescribe a particular course of action or strategy for a context that is 25 years away. There are still too many unknowns at this point. What is known, though, is that the context will change from what it was when deterrence theory was in its heyday to what it will be in the future. Rapid technology change, economic interdependence, interconnectedness, and new warfighting domains will greatly complicate future deterrence strategies.

[128] Mansfield, Edward D., *Power Trade and War*, (Princeton, NY: Princeton University Press, 1994), 117-150.

Chapter 6

Conclusion

It is difficult to predict with certainty how China will use its rising economic, political, and military power. China will likely be a peer economic power in 2030 and hold near peer status militarily in the global environment. On the one hand, much of their newfound power now and in the future will be derived from robust international economic trade. The resulting economic interdependence between the two nations should add a degree of stability to foreign relations now and into the future. China will not want to upset their long term growth strategy by taking aggressive actions around the globe. Additionally, as China moves to become more democratic with "Chinese characteristics," the idea of the democratic peace theory that postulates that democracies do not fight democracies may also help reduce the chances of conflict. On the other hand, China will need energy and other natural resources to continue feeding its population, fueling its economy, and building its military power. Competition for these scarce resources will likely add stress to an already contentious international environment.

Strategists have to be ready and prepared for all possible outcomes. The U.S. must still be able to influence geopolitical events and keep a rising China in check by deterring them from actions harmful to U.S. national interests. However, economic interdependence and advances in both cyber and space technologies will greatly complicate deterrent strategies against a rising China.

Faced with this challenge, strategists will have to develop conventional, nuclear, space, cyber, and perhaps even biowarfare and nanowarfare deterrent strategies. The advent and use of these new domains, however, requires U.S. policy makers to examine current policy and

strategies and adjust them as necessary for a changing strategic environment. With that in mind, this paper makes the following recommendations for U.S. policy makers and defense strategists faced with deterring a rising China:

1. In the nuclear arena, the U.S. must continue to develop new weapon delivery capabilities and missile defense systems. Deterrence by denial requires that we work to be able to fight through an attack. This, in turn, requires making defenses more robust and ensuring that our delivery vehicles are able to penetrate an adversary's territory knowing that he will likely attempt to defend against this threat as well. This may not necessarily change the concept of a multi-legged nuclear arsenal, but it does beg for modernization of the means of delivery.

2. The current national policy of the U.S. to respond to all WMD attacks with WMD (and our only remaining WMD is nuclear weapons) is a policy that needs to be changed. The U.S. is unlikely to use nuclear weapons against a nation that uses non-nuclear WMD. Nuclear weapons are unique in their speed and destructive power. The U.S. has the capability to deal with other types of WMD without resorting to nuclear weapons. That fact lessens the credibility of overt and veiled threats of a nuclear response.

3. We need to make our cyber offense capabilities more credible. Keeping everything behind the green door is antithetical to deterrence both in cyber and across the domain in space. To enhance the credibility of a cyberspace deterrent, implementation of automated responses may be useful. Since attacks in cyberspace need to be repelled at super-human speeds, this may be the only logical way to respond. An automatic response becomes one that is not predicated on emotions; therefore the response will be incurred if an attack is launched assuring the ultimate in credibility.

4. In conjunction with the policy change in #2 above, the U.S. needs to develop and articulate a cross-domain deterrence strategy as it pertains to cyberspace and space.

5. In order to properly practice deterrence by denial as it applies to space systems, inertial navigation systems (or similar non-space reliant systems) need to be maintained and improved on all current and future weapon systems.

6. The U.S. needs to think through how it can hold the "mandate of heaven" hostage as a deterrent strategy while being able to withstand the impacts of this strategy at home.

7. The maintenance of basing in the South Asian region remains important, as extended deterrence is made more credible by U.S. personnel acting as a trip wire in places like Japan and Korea.

Though examined through the lens of a Chinese deterrent strategy, with few exceptions, the list above will be beneficial to developing deterrent strategies for other nations as well. Current and future strategists must tailor their efforts to the situation at hand. Space, cyber, and economic warfare are merely new domains that the strategist must consider in building deterrence strategies and the recommendations above are derived from the basic concepts and precepts that helped build early deterrence strategies. Clausewitz correctly noted that weapons do not change the eternal logic of war, only the evolving grammar. The same can be said for the logic of deterrence.

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